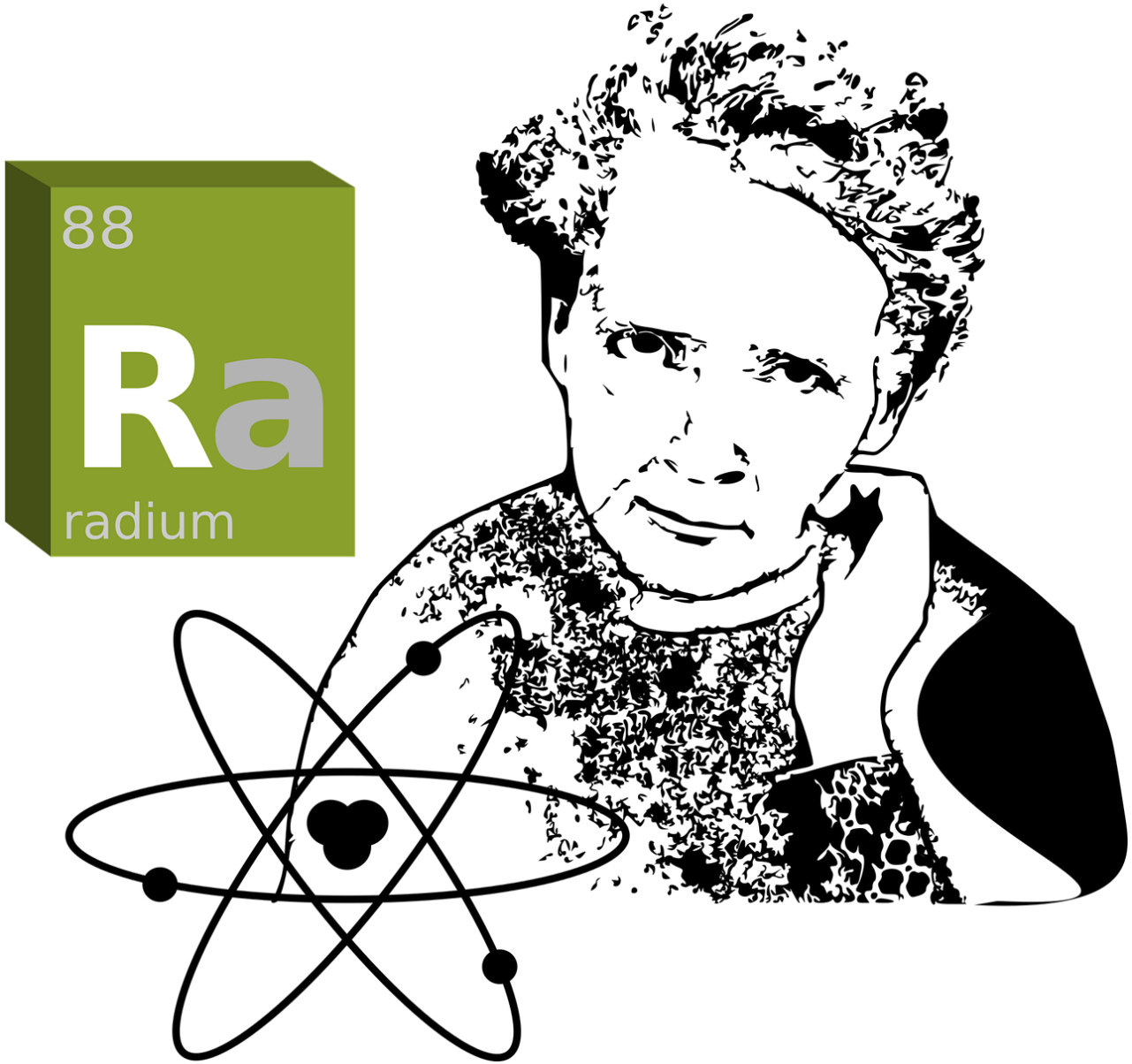
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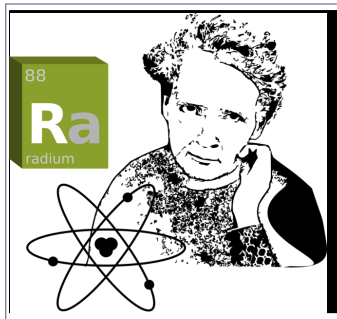
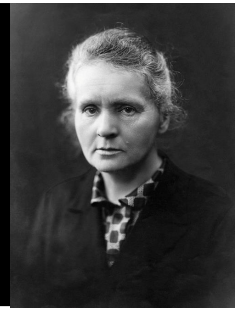


Marie Curie



Maria Salomea Skłodowska-Curie née Skłodowska; 7 November 1867 – 4 July 1934), known simply as Marie Curie, was a Polish and naturalised-French physicist and chemist who conducted pioneering research on radioactivity. She was the first woman to win a Nobel Prize, the first person to win a Nobel Prize twice, and the only person to win a Nobel Prize in two scientific fields. Her husband, Pierre Curie, was a co-winner of her first Nobel Prize, making them the first-ever married couple to win the Nobel Prize and launching the Curie family legacy of five Nobel Prizes. She was, in 1906, the first woman to become a professor at the University of Paris.

She was born in Warsaw, in what was then the Kingdom of Poland, part of the Russian Empire. She studied at Warsaw's clandestine Flying University and began her practical scientific training in Warsaw. In 1891, aged 24, she followed her elder sister Bronisława to study in Paris, where she earned her higher degrees and conducted her subsequent scientific work. In 1895 she married the French physicist Pierre Curie, and she shared the 1903 Nobel Prize in Physics with him and with the physicist Henri Becquerel for their pioneering work developing the theory of "radioactivity"—a term she coined.

Bronisława Dłuska (centre right) with father Władysław Skłodowski and sisters Maria (left) and Helena (right), 1890

Helena Skłodowska-Szalay (also known as Helena Szalayowa; 20 April 1866, Warsaw — 6 February 1961) was a Polish educator, inspector of Warsaw schools, educational activist, and a member of the women's election committee of the Nation-State Union political party. She is known for her memoirs of her sister, Marie Curie, and the school she established for girls in Warsaw.

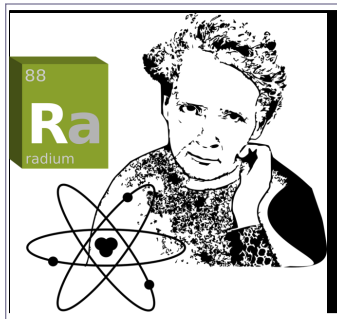
Birthplace of Marie Curie, at 16 Freta Street, in Warsaw, Poland.

Bronisława Dłuska née Skłodowska; 28 March 1865 – 15 April 1939) was a Polish physician, and co-founder and first director of Warsaw's Maria Skłodowska-Curie Institute of Oncology. She was married to political activist Kazimierz Dłuski, and was an older sister of physicist Marie Curie.

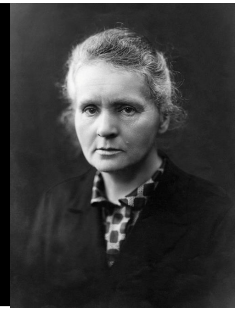
Marie Curie

In 1906 Pierre Curie died in a Paris street accident. Marie won the 1911 Nobel Prize in Chemistry for her discovery of the elements polonium and radium, using techniques she invented for isolating radioactive isotopes. Under her direction, the world's first studies were conducted into the treatment of neoplasms by the use of radioactive isotopes. She founded the Curie Institute in Paris in 1920, and the Curie Institute in Warsaw in 1932; both remain major medical research centres. During World War I she developed mobile radiography units to provide X-ray services to field hospitals.

While a French citizen, Marie Skłodowska Curie, who used both surnames, never lost her sense of Polish identity.



Marie Curie

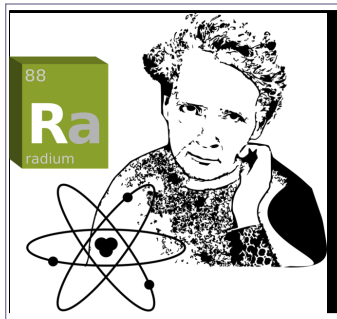


She taught her daughters the Polish language and took them on visits to Poland. She named the first chemical element she discovered polonium, after her native country.[a] Marie Curie died in 1934, aged 66, at the Sancellemoz sanatorium in Passy (Haute-Savoie), France, of aplastic anemia likely from exposure to radiation in the course of her scientific research and in the course of her radiological work at field hospitals during World War I. In addition to her Nobel Prizes, she received numerous other honours and tributes; in 1995 she became the first woman to be entombed on her own merits in the Paris Panthéon, and Poland declared 2011 the Year of Marie Curie during the International Year of Chemistry. She is the subject of numerous biographical works.

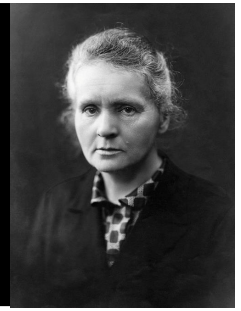
Maria Skłodowska was born in Warsaw, in Congress Poland in the Russian Empire, on 7 November 1867, the fifth and youngest child of well-known teachers Bronisława, née Boguska, and Władysław Skłodowski. The elder siblings of Maria (nicknamed Mania) were Zofia (born 1862, nicknamed Zosia), Józef [pl] (born 1863, nicknamed Józio), Bronisława (born 1865, nicknamed Bronia) and Helena (born 1866, nicknamed Hela).

Marie Curie

On both the paternal and maternal sides, the family had lost their property and fortunes through patriotic involvements in Polish national uprisings aimed at restoring Poland's independence (the most recent had been the January Uprising of 1863–65). This condemned the subsequent generation, including Maria and her elder siblings, to a difficult struggle to get ahead in life. Maria's paternal grandfather, Józef Skłodowski [pl], had been principal of the Lublin primary school attended by Bolesław Prus, who became a leading figure in Polish literature.



Marie Curie

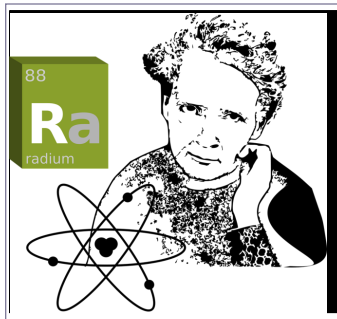


Władysław Skłodowski taught mathematics and physics, subjects that Maria was to pursue, and was also director of two Warsaw gymnasia (secondary schools) for boys. After Russian authorities eliminated laboratory instruction from the Polish schools, he brought much of the laboratory equipment home and instructed his children in its use. He was eventually fired by his Russian supervisors for pro-Polish sentiments and forced to take lower-paying posts; the family also lost money on a bad investment and eventually chose to supplement their income by lodging boys in the house. Maria's mother Bronisława operated a prestigious Warsaw boarding school for girls; she resigned from the position after Maria was born. She died of tuberculosis in May 1878, when Maria was ten years old. Less than three years earlier, Maria's oldest sibling, Zofia, had died of typhus contracted from a boarder. Maria's father was an atheist, her mother a devout Catholic. The deaths of Maria's mother and sister caused her to give up Catholicism and become agnostic.

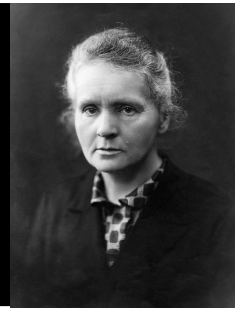
When she was ten years old, Maria began attending the boarding school of J. Sikorska; next, she attended a gymnasium for girls, from which she graduated on 12 June 1883 with a gold medal.

Marie Curie

After a collapse, possibly due to depression, she spent the following year in the countryside with relatives of her father, and the next year with her father in Warsaw, where she did some tutoring. Unable to enroll in a regular institution of higher education because she was a woman, she and her sister Bronisława became involved with the clandestine Flying University (sometimes translated as Floating University), a Polish patriotic institution of higher learning that admitted women students. Maria made an agreement with her sister, Bronisława, that she would give her financial assistance during Bronisława's medical studies in Paris, in exchange for similar assistance two years later.

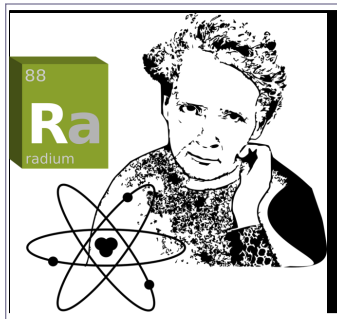


Marie Curie

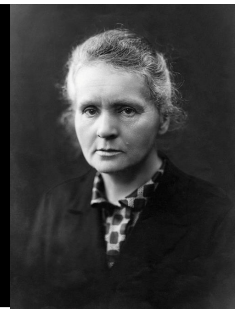


In connection with this, Maria took a position first as a home tutor in Warsaw, then for two years as a governess in Szczuki with a landed family, the Żorawskis, who were relatives of her father. While working for the latter family, she fell in love with their son, Kazimierz Żorawski, a future eminent mathematician. His parents rejected the idea of his marrying the penniless relative, and Kazimierz was unable to oppose them. Maria's loss of the relationship with Żorawski was tragic for both. He soon earned a doctorate and pursued an academic career as a mathematician, becoming a professor and rector of Kraków University. Still, as an old man and a mathematics professor at the Warsaw Polytechnic, he would sit contemplatively before the statue of Maria Skłodowska that had been erected in 1935 before the Radium Institute, which she had founded in 1932.

At the beginning of 1890, Bronisława—who a few months earlier had married Kazimierz Dłuski, a Polish physician and social and political activist—invited Maria to join them in Paris. Maria declined because she could not afford the university tuition; it would take her a year and a half longer to gather the necessary funds. She was helped by her father, who was able to secure a more lucrative position again. All that time she continued to educate herself, reading books, exchanging letters, and being tutored herself.

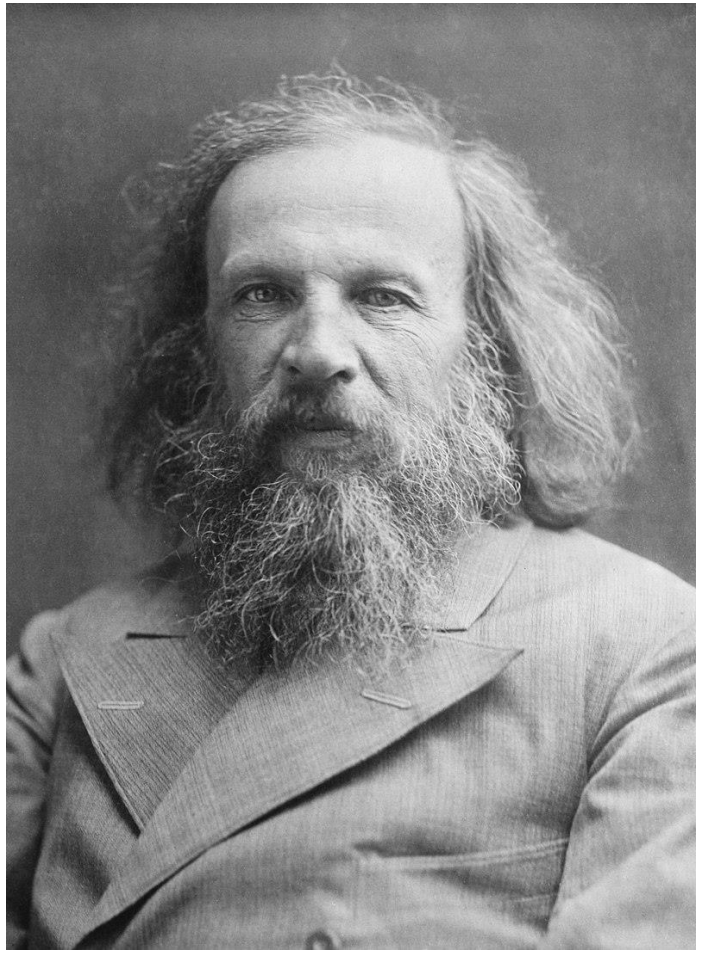


Marie Curie

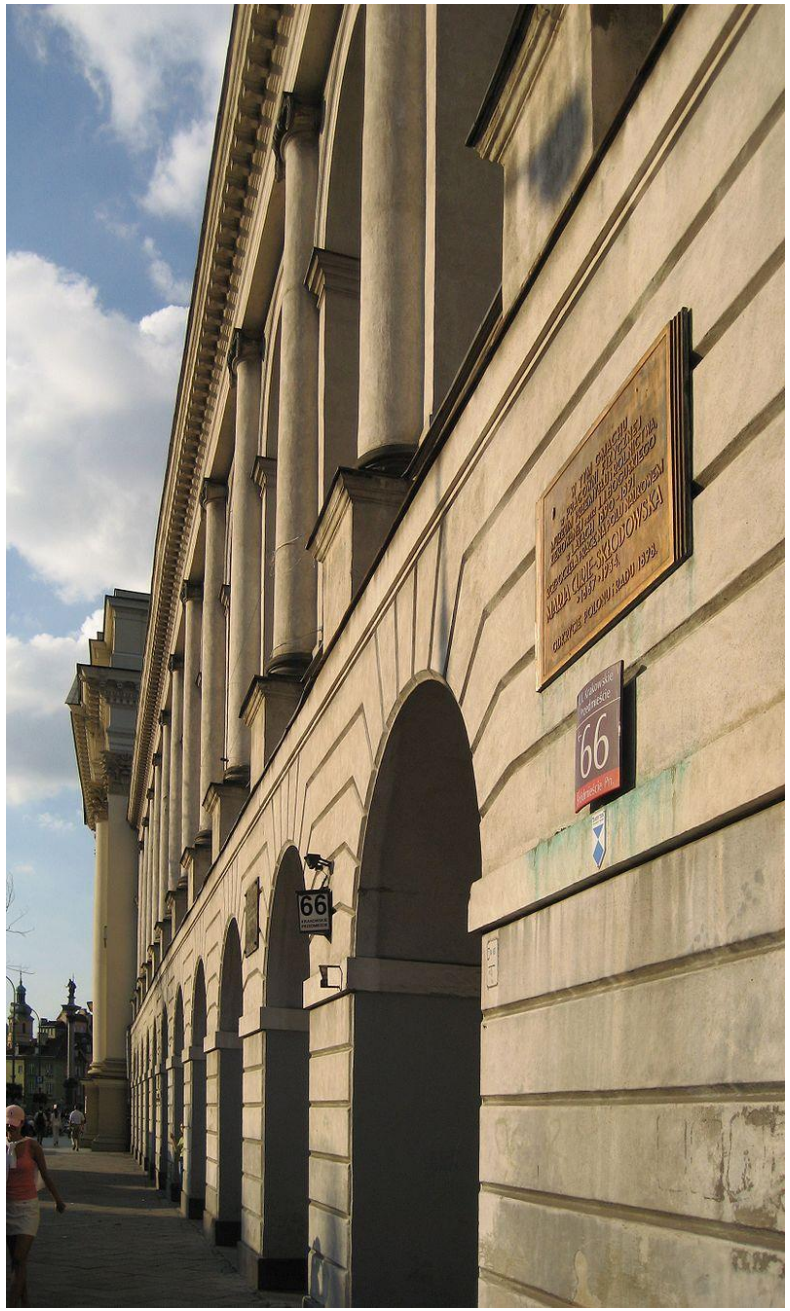


In early 1889 she returned home to her father in Warsaw. She continued working as a governess and remained there until late 1891. She tutored, studied at the Flying University, and began her practical scientific training (1890–91) in a chemistry laboratory at the Museum of Industry and Agriculture at Krakowskie Przedmieście 66, near Warsaw's Old Town. The laboratory was run by her cousin Józef Boguski, who had been an assistant in Saint Petersburg to the Russian chemist Dmitri Mendeleyev

Mendeleef; : Dmitry Ivanovich Mendeleyev, 8 February [O.S. 27 January] 1834 – 2 February [O.S. 20 January] 1907) was a Russian chemist and inventor. He is best known for formulating the Periodic Law and creating a version of the periodic table of elements. He used the Periodic Law not only to correct the then-accepted properties of some known elements, such as the valence and atomic weight of uranium, but also to predict the properties of three elements that were yet to be discovered (germanium, gallium and scandium).

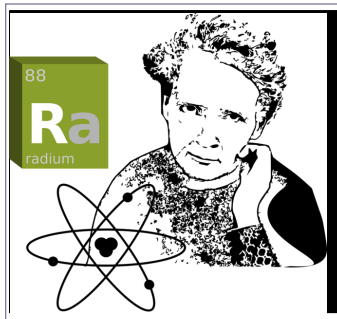


Krakowskie Przedmieście, literally: Cracow Fore-town, often abbreviated to Krakowskie, is one of the best known and most prestigious streets of Poland's capital Warsaw, surrounded by historic palaces, churches and manor-houses. Krakowskie Przedmieście Royal Avenue constitutes the northernmost part of Warsaw's Royal Route, and links the Old Town and Royal Castle (at Castle Square) with some of the most notable institutions in Warsaw, including – proceeding southward – the Presidential Palace, Warsaw University, and the Polish Academy of Sciences headquartered in the Staszic Palace.

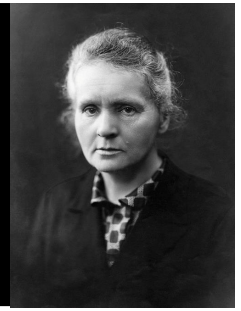


Pierre Curie was an instructor at The City of Paris Industrial Physics and Chemistry Higher Educational Institution (ESPCI Paris). They were introduced by Polish physicist Józef Wierusz-Kowalski, who had learned that she was looking for a larger laboratory space, something that Wierusz-Kowalski thought Pierre could access. Though Curie did not have a large laboratory, he was able to find some space for Skłodowska where she was able to begin work.

Their mutual passion for science brought them increasingly closer, and they began to develop feelings for one another. Eventually, Pierre proposed marriage, but at first Skłodowska did not accept as she was still planning to go back to her native country. Curie, however, declared that he was ready to move with her to Poland, even if it meant being reduced to teaching French. Meanwhile, for the 1894 summer break, Skłodowska returned to Warsaw, where she visited her family. She was still labouring under the illusion that she would be able to work in her chosen field in Poland, but she was denied a place at Kraków University because of sexism in academia.

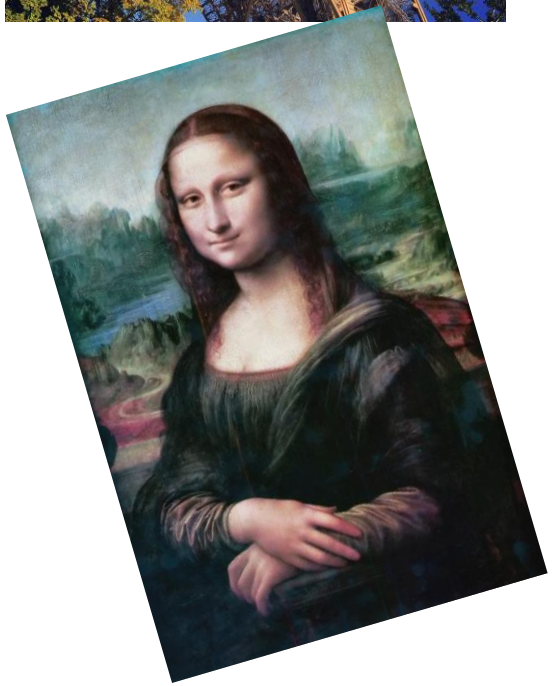


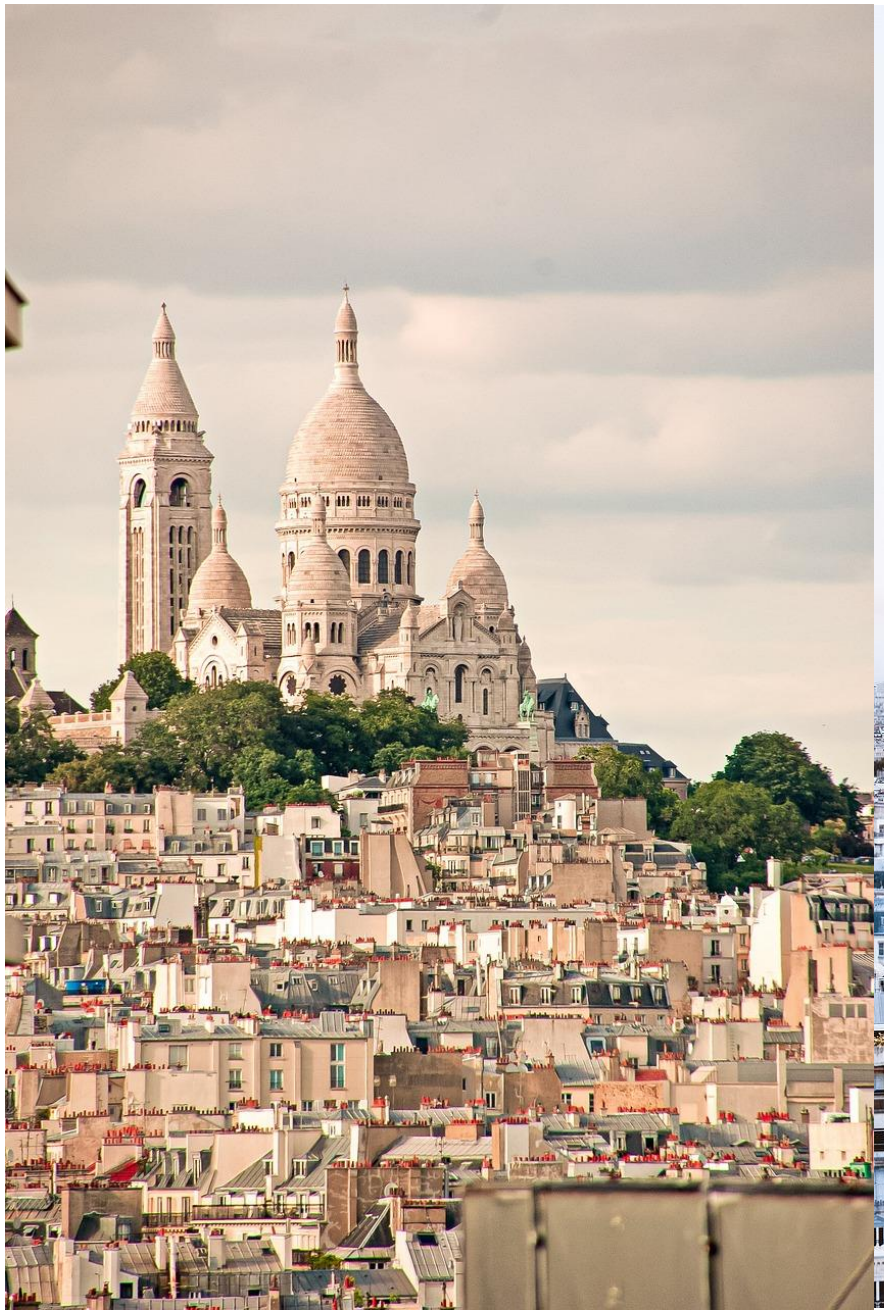
Marie Curie

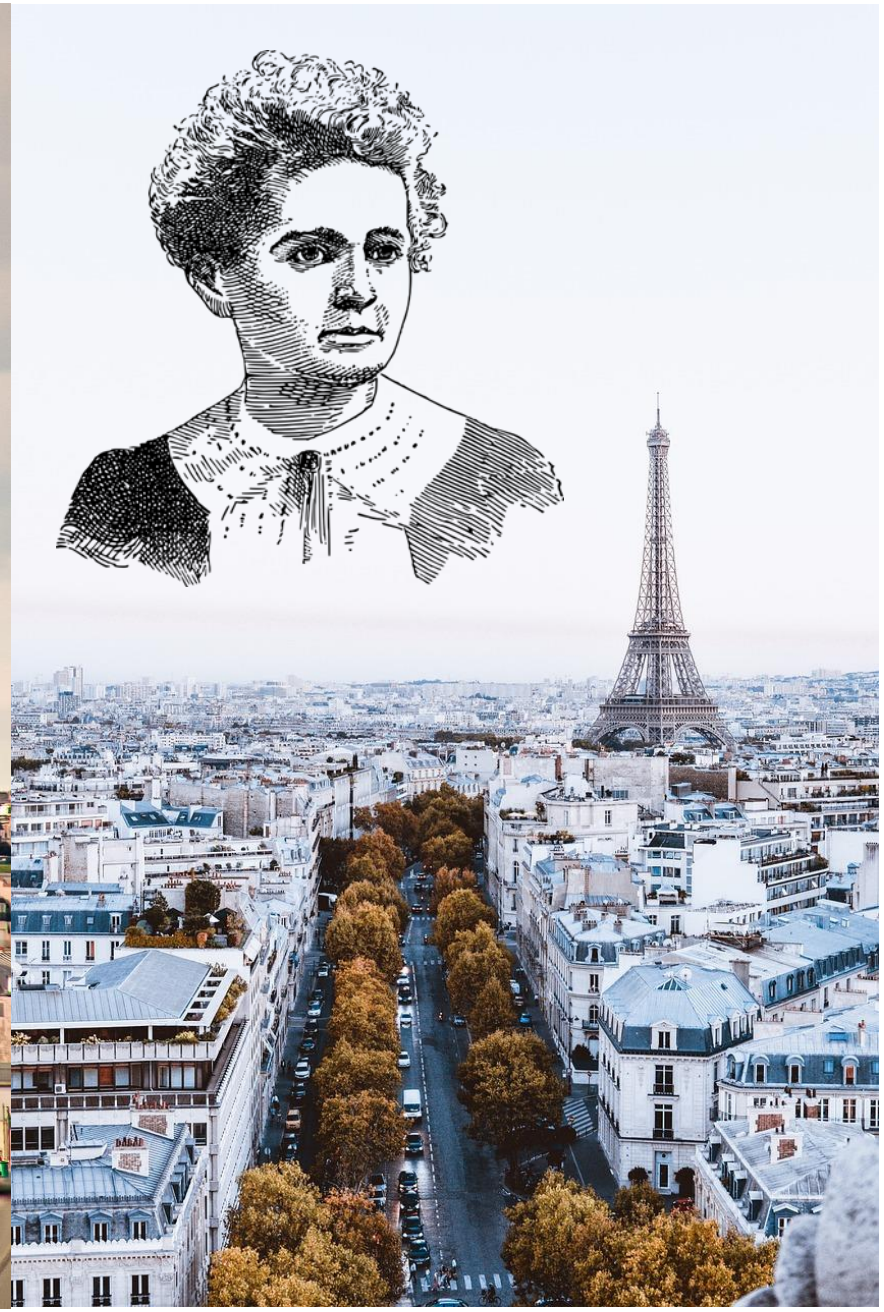


Life in Paris

In late 1891, she left Poland for France. In Paris, Maria (or Marie, as she would be known in France) briefly found shelter with her sister and brother-in-law before renting a garret closer to the university, in the Latin Quarter, and proceeding with her studies of physics, chemistry, and mathematics at the University of Paris, where she enrolled in late 1891. She subsisted on her meagre resources, keeping herself warm during cold winters by wearing all the clothes she had. She focused so hard on her studies that she sometimes forgot to eat. Skłodowska studied during the day and tutored evenings, barely earning her keep. In 1893, she was awarded a degree in physics and began work in an industrial laboratory of Gabriel Lippmann. Meanwhile, she continued studying at the University of Paris and with the aid of a fellowship she was able to earn a second degree in 1894.
Skłodowska had begun her scientific career in Paris with an investigation of the magnetic properties of various steels, commissioned by the Society for the Encouragement of National Industry. That same year, Pierre Curie entered her life: it was their mutual interest in natural sciences that drew them together.

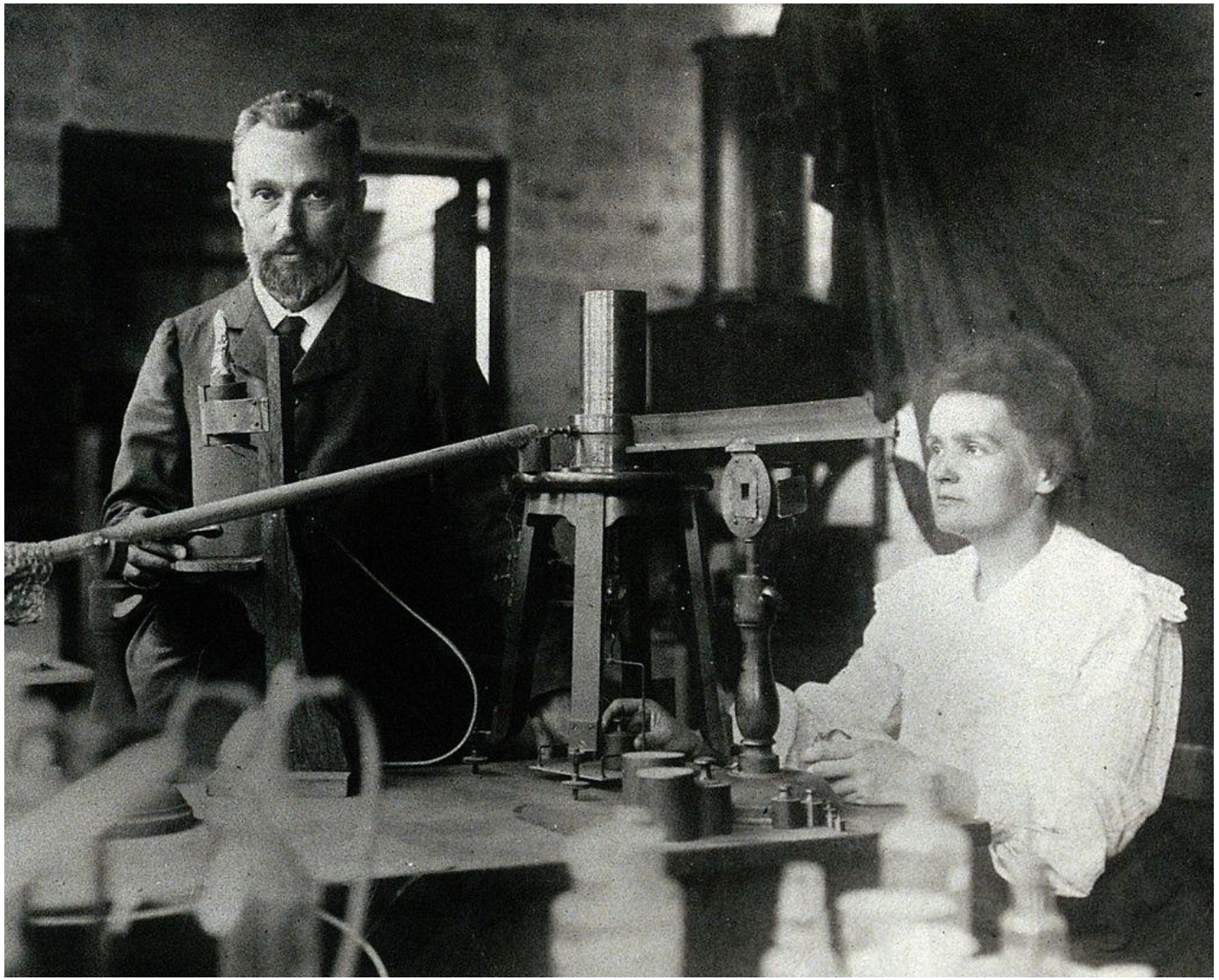


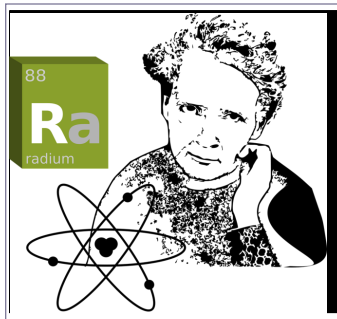




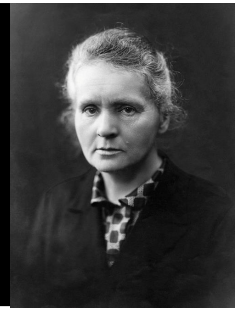
A letter from Pierre convinced her to return to Paris to pursue a PhD. At Skłodowska's insistence, Curie had written up his research on magnetism and received his own doctorate in March 1895; he was also promoted to professor at the School. A contemporary quip would call Skłodowska "Pierre's biggest discovery".

On 26 July 1895, they were married in Sceaux; neither wanted a religious service. Curie's dark blue outfit, worn instead of a bridal gown, would serve her for many years as a laboratory outfit. They shared two pastimes: long bicycle trips and journeys abroad, which brought them even closer. In Pierre, Marie had found a new love, a partner, and a scientific collaborator on whom she could depend.

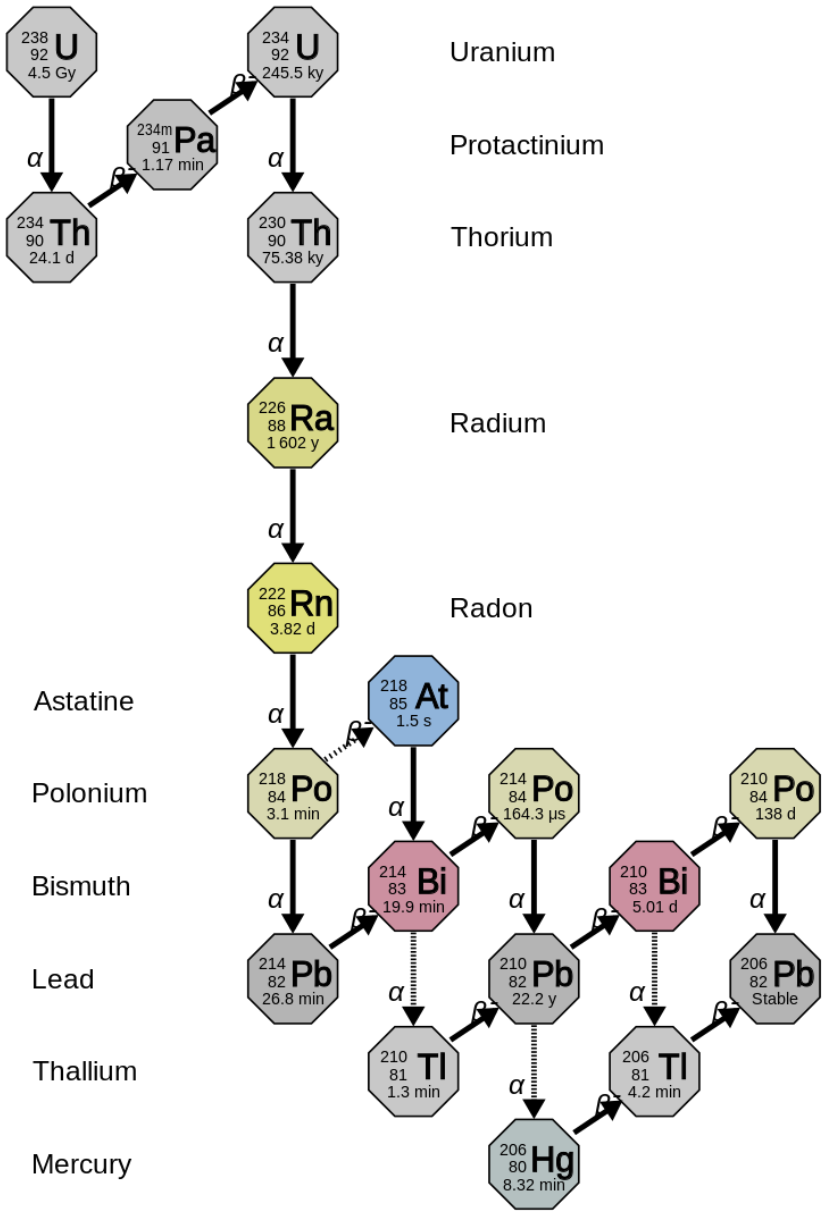




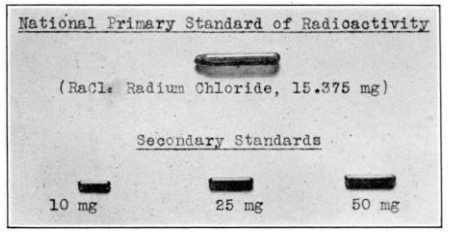
Marie Curie



Radium was discovered by Marie Skłodowska-Curie and her husband Pierre Curie on 21 December 1898, in a uraninite (pitchblende) sample from Jáchymov. While studying the mineral earlier, the Curies removed uranium from it and found that the remaining material was still radioactive. In July 1898, while studying pitchblende, they isolated an element similar to bismuth which turned out to be polonium. They then isolated a radioactive mixture consisting of two components: compounds of barium, which gave a brilliant green flame color, and unknown radioactive compounds which gave carmine spectral lines that had never been documented before. The Curies found the radioactive compounds to be very similar to the barium compounds, except they were less soluble. This discovery made it possible for the Curies to isolate the radioactive compounds and discover a new element in them.

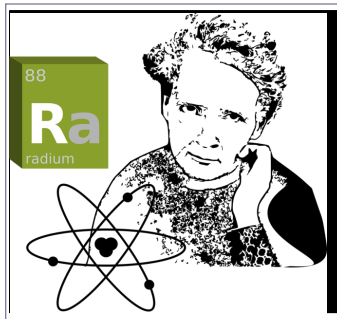

238 92 U 4.5 Gy
234m 91 Pa 1.17 min
234 92 U 245.5 ky
234 90 Th 24.1 d
230 90 Th 75.38 ky
226 88 Ra 1 602 y
222 86 Rn 3.82 d
218 85 At 1.5 s
218 84 Po 3.1 min
214 84 Po 164.3 µs
210 84 Po 138 d
214 83 Bi 19.9 min
210 83 Bi 5.01 d
214 82 Pb 26.8 min
210 82 Pb 22.2 y
206 82 Pb Stable
210 81 Tl 1.3 min
206 81 Tl 4.2 min
206 80 Hg 8.32 min
α
β-
Uranium
Protactinium
Thorium
Radium
Radon
Astatine
Polonium
Bismuth
Lead
Thallium
Mercury

Marie Curie

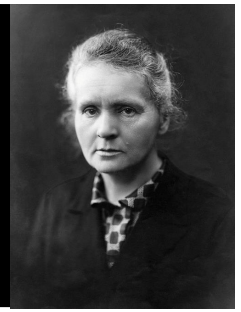


The Curies announced their discovery to the French Academy of Sciences on 26 December 1898. The naming of radium dates to about 1899, from the French word radium, formed in Modern Latin from radius (ray): this was in recognition of radium's power of emitting energy in the form of rays.

In September 1910, Marie Curie and André-Louis Debierne announced that they had isolated radium as a pure metal through the electrolysis of pure radium chloride (RaCl2) solution using a mercury cathode, producing radium–mercury amalgam.



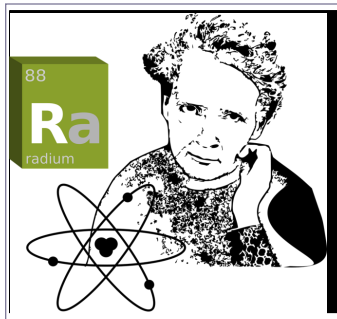
Marie Curie



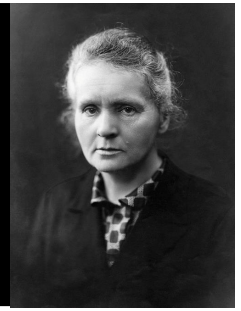
Radium (usually in the form of radium chloride or radium bromide) was used in medicine to produce radon gas, which in turn was used as a cancer treatment; for example, several of these radon sources were used in Canada in the 1920s and 1930s. However, many treatments that were used in the early 1900s are not used anymore because of the harmful effects radium bromide exposure caused. Some examples of these effects are anaemia, cancer, and genetic mutations. As of 2011, safer gamma emitters such as 60Co, which is less costly and available in larger quantities, are usually used to replace the historical use of radium in this application.

Early in the 1900s, biologists used radium to induce mutations and study genetics.

Monument to the Discovery of Radium in Jáchymov

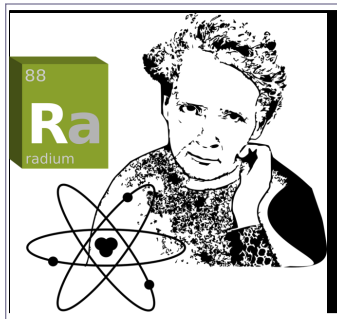


Marie Curie

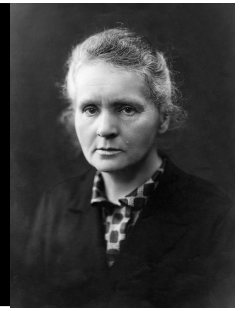


In 1895, Wilhelm Röntgen discovered the existence of X-rays, though the mechanism behind their production was not yet understood. In 1896, Henri Becquerel discovered that uranium salts emitted rays that resembled X-rays in their penetrating power. He demonstrated that this radiation, unlike phosphorescence, did not depend on an external source of energy but seemed to arise spontaneously from uranium itself. Influenced by these two important discoveries, Curie decided to look into uranium rays as a possible field of research for a thesis.

She used an innovative technique to investigate samples. Fifteen years earlier, her husband and his brother had developed a version of the electrometer, a sensitive device for measuring electric charge. Using her husband's electrometer, she discovered that uranium rays caused the air around a sample to conduct electricity. Using this technique, her first result was the finding that the activity of the uranium compounds depended only on the quantity of uranium present.
She hypothesized that the radiation was not the outcome of some interaction of molecules but must come from the atom itself.



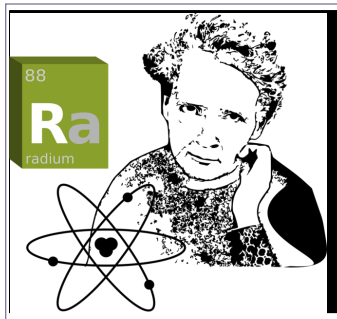
Marie Curie



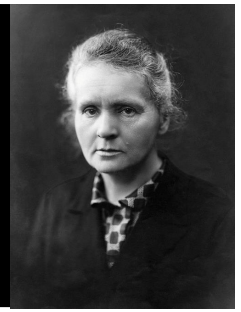
This hypothesis was an important step in disproving the assumption that atoms were indivisible.

In 1897, her daughter Irène was born. To support her family, Curie began teaching at the École Normale Supérieure. The Curies did not have a dedicated laboratory; most of their research was carried out in a converted shed next to ESPCI. The shed, formerly a medical school dissecting room, was poorly ventilated and not even waterproof. They were unaware of the deleterious effects of radiation exposure attendant on their continued unprotected work with radioactive substances. ESPCI did not sponsor her research, but she would receive subsidies from metallurgical and mining companies and from various organizations and governments.

Curie's systematic studies included two uranium minerals, pitchblende and torbernite (also known as chalcolite). Her electrometer showed that pitchblende was four times as active as uranium itself, and chalcolite twice as active. She concluded that, if her earlier results relating the quantity of uranium to its activity were correct, then these two minerals must contain small quantities of another substance that was far more active than uranium.

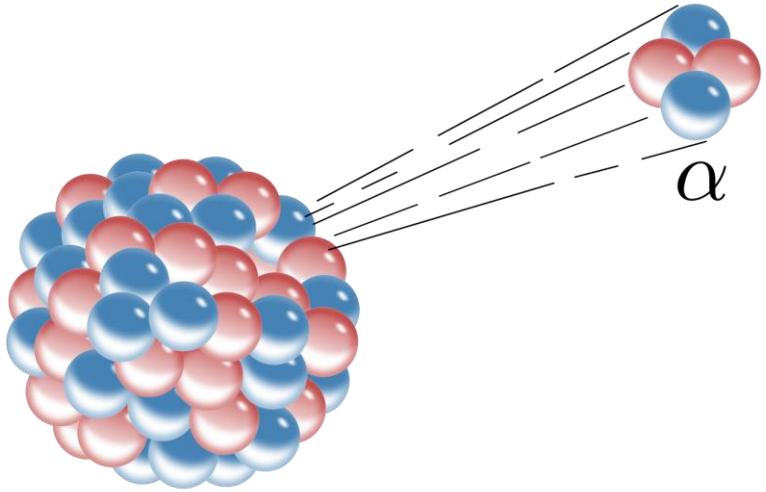


Marie Curie

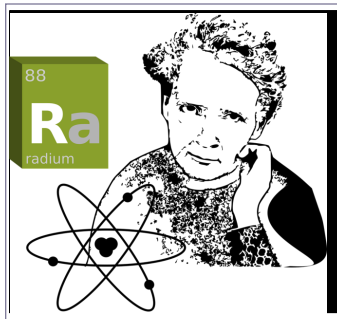


She began a systematic search for additional substances that emit radiation, and by 1898 she discovered that the element thorium was also radioactive. Pierre Curie was increasingly intrigued by her work. By mid-1898 he was so invested in it that he decided to drop his work on crystals and to join her.

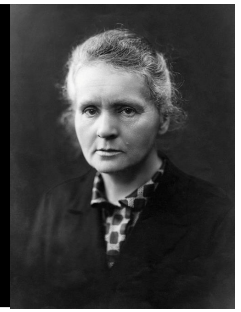
In July 1898, Curie and her husband published a joint paper announcing the existence of an element they named "polonium", in honour of her native Poland, which would for another twenty years remain partitioned among three empires (Russian, Austrian, and Prussian). On 26 December 1898, the Curies announced the existence of a second element, which they named "radium", from the Latin word for "ray". In the course of their research, they also coined the word "radioactivity".



Alpha decay or α-decay is a type of radioactive decay in which an atomic nucleus emits an alpha particle (helium nucleus) and thereby transforms or 'decays' into a different atomic nucleus, with a mass number that is reduced by four and an atomic number that is reduced by two.

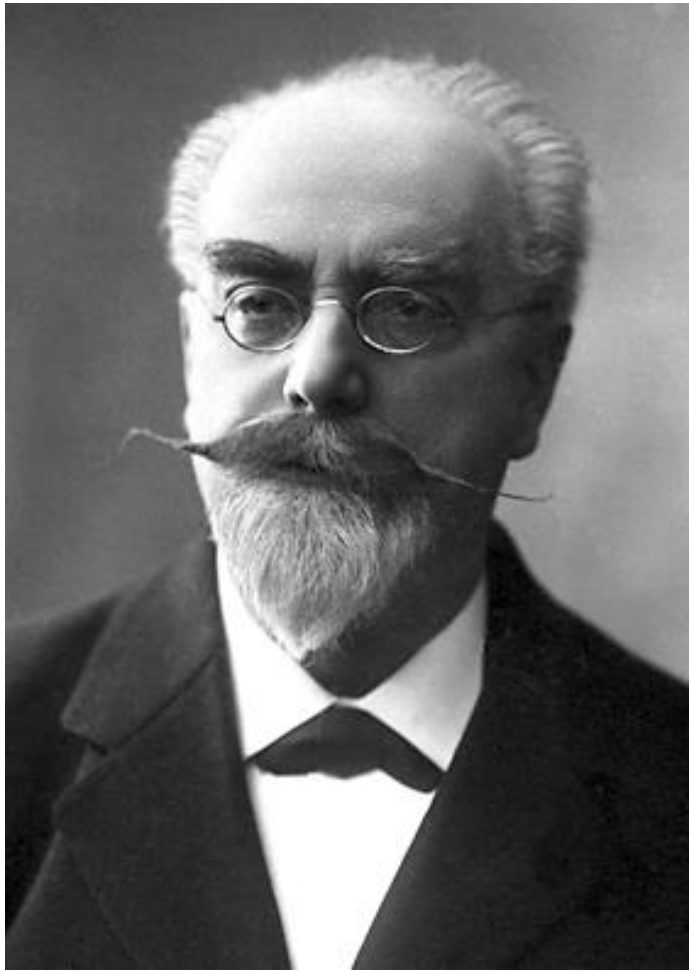


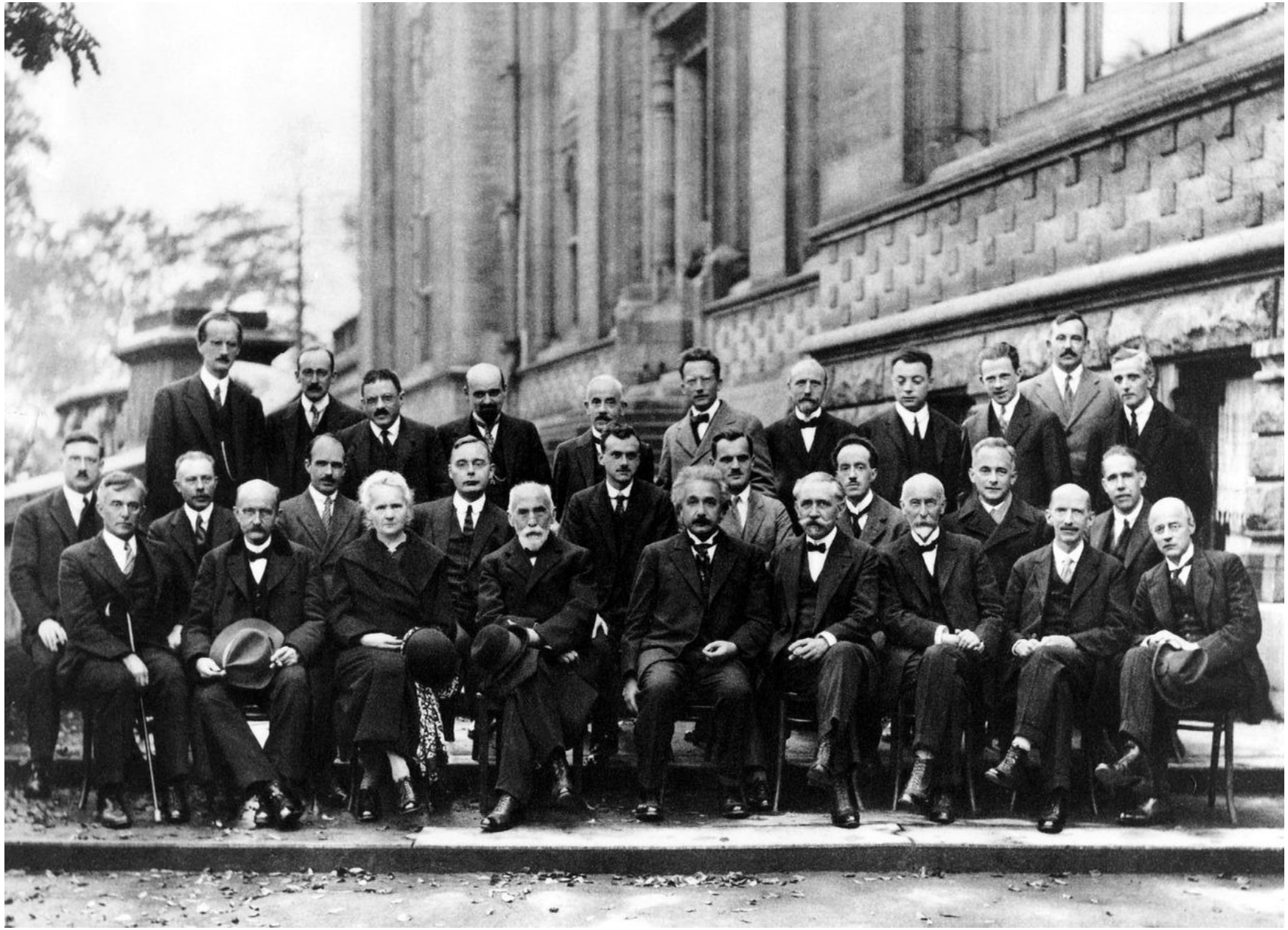
Marie Curie

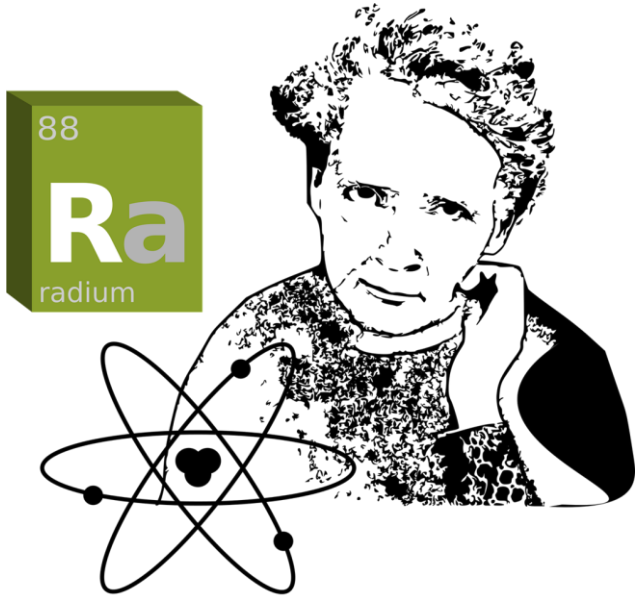


In 1900, Curie became the first woman faculty member at the École Normale Supérieure and her husband joined the faculty of the University of Paris. In 1902 she visited Poland on the occasion of her father's death.

In June 1903, supervised by ***Gabriel Lippmann***, Curie was awarded her doctorate from the University of Paris. That month the couple were invited to the Royal Institution in London to give a speech on radioactivity; being a woman, she was prevented from speaking, and Pierre Curie alone was allowed to. Meanwhile, a new industry began developing, based on radium. The Curies did not patent their discovery and benefited little from this increasingly profitable business.






88
Ra
radium

Marie Curie

Nobel Prizes

In December 1903 the Royal Swedish Academy of Sciences awarded Pierre Curie, Marie Curie, and Henri Becquerel the Nobel Prize in Physics, "in recognition of the extraordinary services they have rendered by their joint researches on the radiation phenomena discovered by Professor Henri Becquerel. At first the committee had intended to honour only Pierre Curie and Henri Becquerel, but a committee member and advocate for women scientists, Swedish mathematician Magnus Gösta Mittag-Leffler, alerted Pierre to the situation, and after his complaint, Marie's name was added to the nomination. Marie Curie was the first woman to be awarded a Nobel Prize. *Curie and her husband declined to go to Stockholm to receive the prize in person; they were too busy with their work, and Pierre Curie, who disliked public ceremonies.*

KUNGLIGA SVENSKA
VETENSKAPS-AKADEMIEN

har vid sitt sammanträde den 7te November 1911 i enlighet med föreskrifterna i det af

ALFRED NOBEL

den 27 November 1895 upprättade testamente beslutat att öfverlämna det pris som innevarande år bortgifves åt den som har gjort den viktigaste kemiska upptäckt eller förbättring till

Ra=226

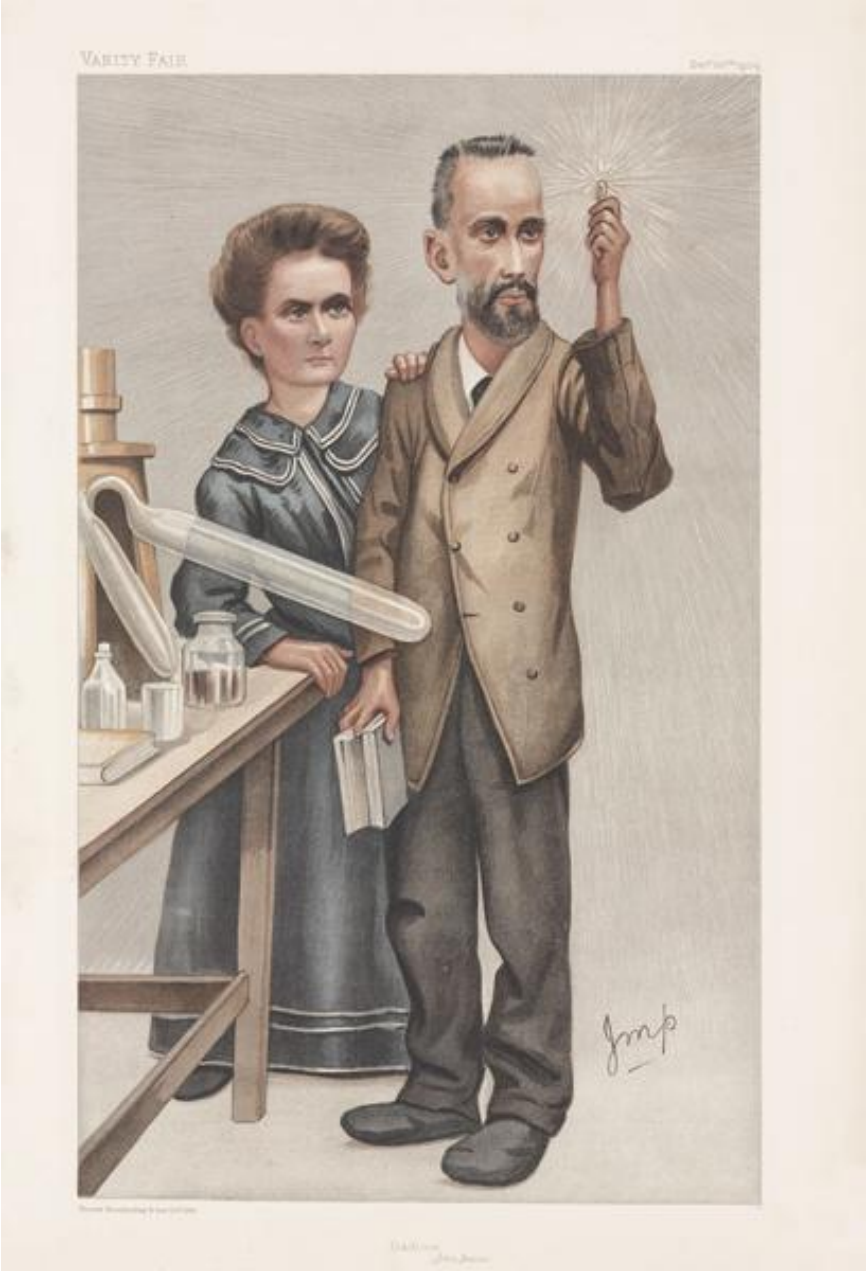
MARIE
SKLODOWSKA CURIE

såsom ett erkännande för den förtjänst hon inlagt om kemiens utveckling genom upptäckten af grundämnena radium och polonium genom karakteriserandet af radium och dess isolerande i metalliskt tillstånd samt genom sina undersökningar angående detta märkliga grundämnes föreningar.

Stockholm den 10 December 1911

E. W. Dahlgren
Kungl. Vet. Akads preses

Chr. Aurivillius
Kungl. Vet. Akis sekreterare.

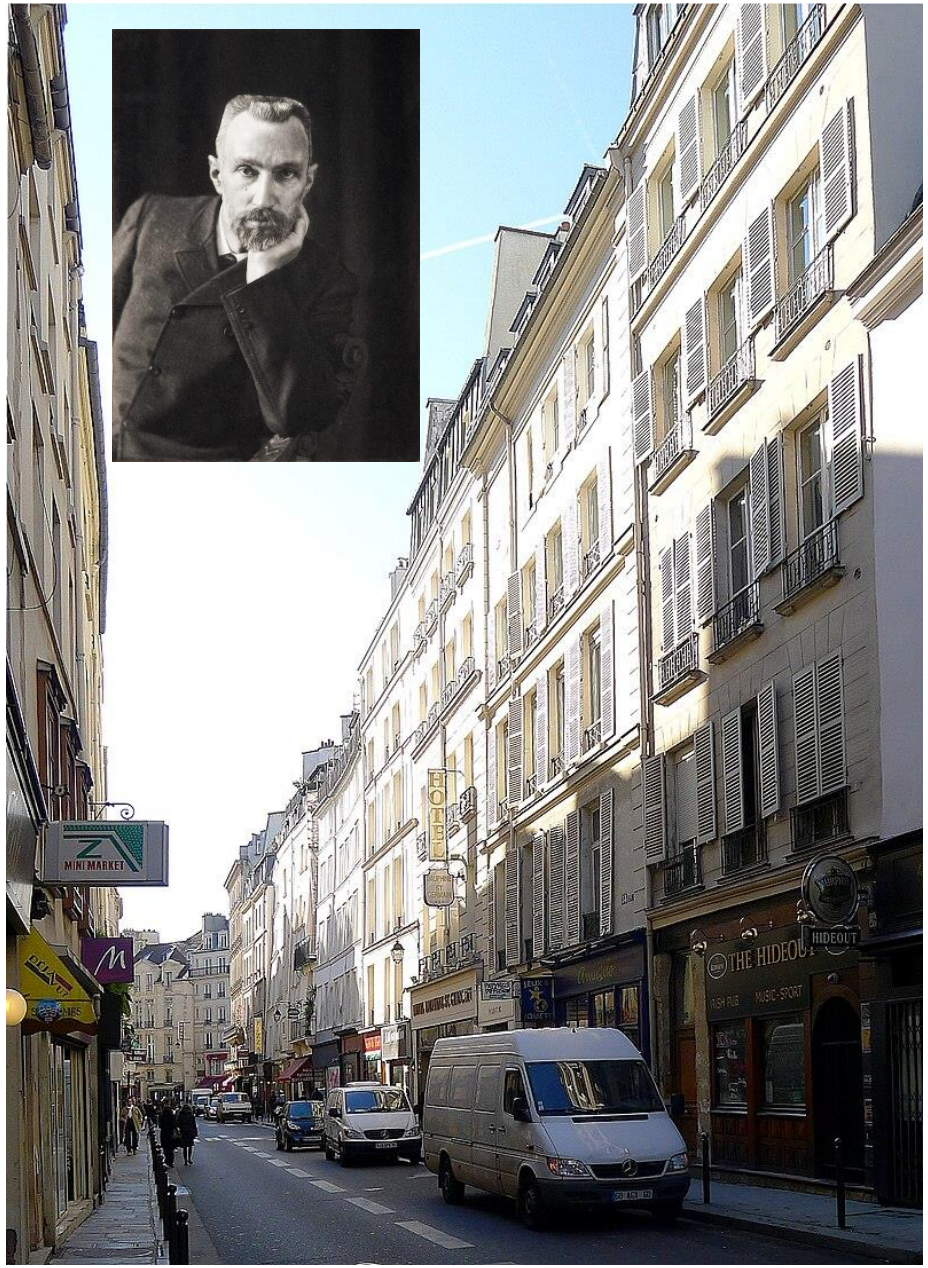


Nobelprize

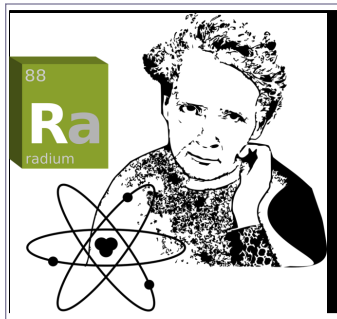
In December 1904, Curie gave birth to their second daughter, Ève. She hired Polish governesses to teach her daughters her native language, and sent or took them on visits to Poland.

As Nobel laureates were required to deliver a lecture, the Curies finally undertook the trip in 1905. The award money allowed the Curies to hire their first laboratory assistant. Following the award of the Nobel Prize, and galvanized by an offer from the University of Geneva, which offered Pierre Curie a position, the University of Paris gave him a professorship and the chair of physics, although the Curies still did not have a proper laboratory. Upon Pierre Curie's complaint, the University of Paris relented and agreed to furnish a new laboratory, but it would not be ready until 1906.

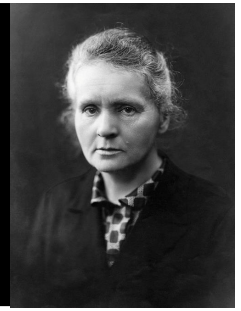
On 19 April 1906, Pierre Curie was killed in a road accident. Walking across the Rue Dauphine in heavy rain, he was struck by a horse-drawn vehicle and fell under its wheels, fracturing his skull and killing him instantly.



Nobel prize–winning physicist Pierre Curie, husband of Marie Skłodowska-Curie, was struck and killed by a horse-drawn carriage on this street in 1906.



Marie Curie

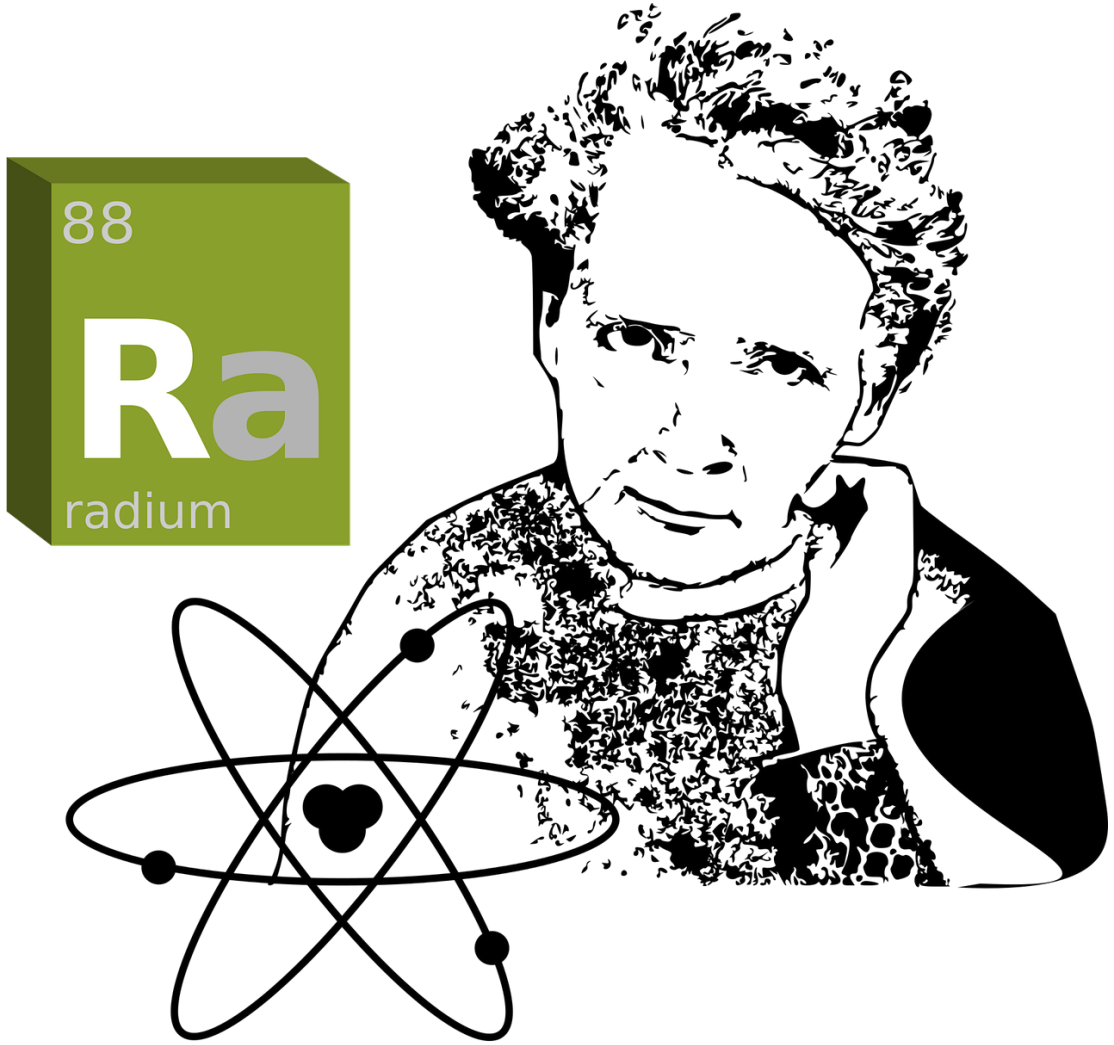


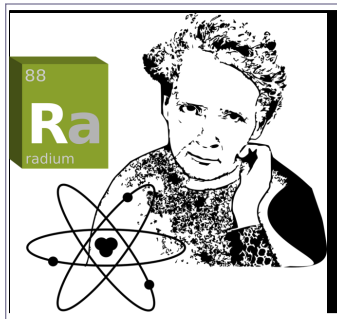
Curie was devastated by her husband's death. On 13 May 1906 the physics department of the University of Paris decided to retain the chair that had been created for her late husband and offer it to Marie. She accepted it, hoping to create a world-class laboratory as a tribute to her husband Pierre. She was the first woman to become a professor at the University of Paris.

Curie's quest to create a new laboratory did not end with the University of Paris, however. In her later years, she headed the Radium Institute (Institut du radium, now Curie Institute, Institut Curie), a radioactivity laboratory created for her by the Pasteur Institute and the University of Paris.

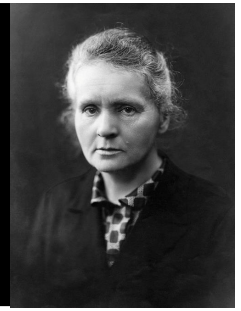
The Radium Institute had come in 1909 from Pierre Paul Émile Roux, director of the Pasteur Institute, who had been disappointed that the University of Paris was not giving Curie a proper laboratory and had suggested that she move to the Pasteur Institute. Only then, with the threat of Curie leaving, did the University of Paris relent, and eventually the Curie Pavilion became a joint initiative of the University of Paris and the Pasteur Institute.

In 1910 Curie succeeded in isolating radium; she also defined an international standard for radioactive emissions that was eventually named for her and Pierre: the curie. Nevertheless, in 1911 the French Academy of Sciences failed, by one or two votes, to elect her to membership in the academy. Elected instead was Édouard Branly, an inventor who had helped Guglielmo Marconi develop the wireless telegraph. It was only over half a century later, in 1962, that a doctoral student of Curie's, Marguerite Perey, became the first woman elected to membership in the academy. Despite Curie's fame as a scientist working for France, the public's attitude tended toward xenophobia—the same that had led to the Dreyfus affair—which also fuelled false speculation that Curie was Jewish.





Marie Curie

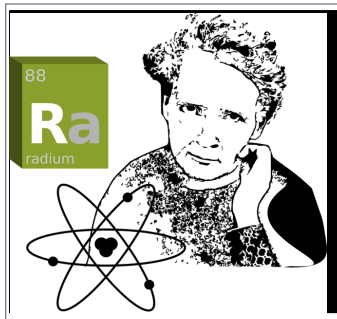


In 1912 the Warsaw Scientific Society offered her the directorship of a new laboratory in Warsaw but she declined, focusing on the developing Radium Institute to be completed in August 1914, and on a new street named Rue Pierre-Curie (today rue Pierre-et-Marie-Curie). She was appointed director of the Curie Laboratory in the Radium Institute of the University of Paris, founded in 1914. She visited Poland in 1913 and was welcomed in Warsaw but the visit was mostly ignored by the Russian authorities. The institute's development was interrupted by the coming war, as most researchers were drafted into the French Army, and it fully resumed its activities in 1919.

During World War I, Curie recognised that wounded soldiers were best served if operated upon as soon as possible. She saw a need for field radiological centres near the front lines to assist battlefield surgeons, including to obviate amputations when in fact limbs could be saved.

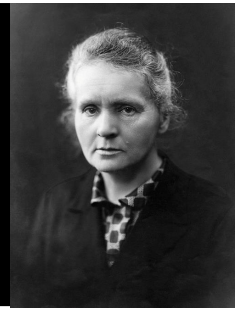
In 1915, Curie produced hollow needles containing "radium emanation", a colourless, radioactive gas given off by radium, later identified as radon, to be used for sterilizing infected tissue.

Curie in a mobile X-ray vehicle, c. 1915



Postwar years

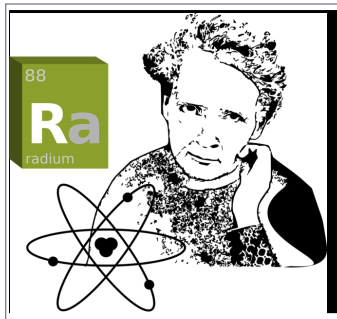
Marie Curie



In 1920, for the 25th anniversary of the discovery of radium, the French government established a stipend for her; its previous recipient was Louis Pasteur, who had died in 1895. In 1921, she was welcomed triumphantly when she toured the United States to raise funds for research on radium. Mrs. William Brown Meloney, after interviewing Curie, created a Marie Curie Radium Fund and raised money to buy radium, publicising her trip.

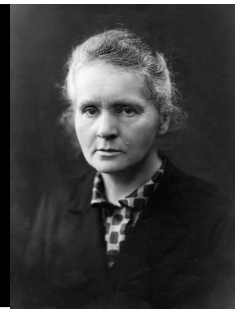
In 1921, U.S. President Warren G. Harding received her at the White House to present her with the 1 gram of radium collected in the United States, and the First Lady praised her as an example of a professional achiever who was also a supportive wife. Before the meeting, recognising her growing fame abroad, and embarrassed by the fact that she had no French official distinctions to wear in public, the French government offered her a Legion of Honour award, but she refused. In 1922 she became a fellow of the French Academy of Medicine. She also travelled to other countries, appearing publicly and giving lectures in Belgium, Brazil, Spain, and Czechoslovakia.

Led by Curie, the Institute produced four more Nobel Prize winners, including her daughter Irène Joliot-Curie and her son-in-law, Frédéric Joliot-Curie. Eventually it became one of the world's four major radioactivity-research laboratories, the others being the Cavendish Laboratory, with Ernest Rutherford; the Institute for Radium Research, Vienna, with Stefan Meyer; and the Kaiser Wilhelm Institute for Chemistry, with Otto Hahn and Lise Meitner. In August 1922 Marie Curie became a member of the League of Nations' newly created International Committee on Intellectual Cooperation. She sat on the committee until 1934 and contributed to League of Nations' scientific coordination with other prominent researchers such as Albert Einstein, Hendrik Lorentz, and Henri Bergson. In 1923 she wrote a biography of her late husband, titled Pierre Curie. In 1925 she visited Poland to participate in a ceremony laying the foundations for Warsaw's Radium Institute.



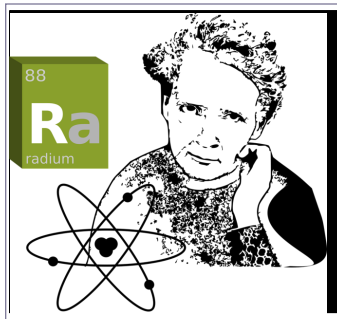
Death

Marie Curie

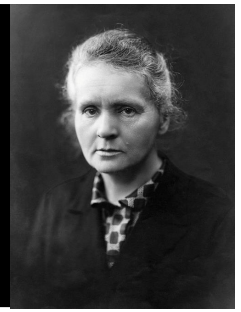


Curie visited Poland for the last time in early 1934. A few months later, on 4 July 1934, she died aged 66 at the Sancellemoz sanatorium in Passy, Haute-Savoie, from aplastic anemia believed to have been contracted from her long-term exposure to radiation, causing damage to her bone marrow.

The damaging effects of ionising radiation were not known at the time of her work, which had been carried out without the safety measures later developed. She had carried test tubes containing radioactive isotopes in her pocket and she stored them in her desk drawer, remarking on the faint light that the substances gave off in the dark. Curie was also exposed to X-rays from unshielded equipment while serving as a radiologist in field hospitals during the First World War. When Curie's body was exhumed in 1995, the French Office de Protection contre les Rayonnements Ionisants (OPRI) "concluded that she could not have been exposed to lethal levels of radium while she was alive". They pointed out that radium poses a risk only if it is ingested, and speculated that her illness was more likely to have been due to her use of radiography during the First World War.



Marie Curie



She was interred at the cemetery in **Sceaux,** alongside her husband Pierre. Sixty years later, in 1995, in honour of their achievements, the remains of both were transferred to the Paris Panthéon. Their remains were sealed in a lead lining because of the radioactivity. She became the second woman to be interred at the Panthéon (after Sophie Berthelot) and the first woman to be honoured with interment in the Panthéon on her own merits.

Because of their levels of radioactive contamination, her papers from the 1890s are considered too dangerous to handle. Even her cookbooks are highly radioactive. Her papers are kept in lead-lined boxes, and those who wish to consult them must wear protective clothing. In her last year, she worked on a book, Radioactivity, which was published posthumously in 1935.

KUNGLIGA SVENSKA VETENSKAPS-AKADEMIEN

har vid sitt sammanträde den 7 November 1911 i enlighet med föreskrifterna i det af

ALFRED NOBEL

den 27 November 1895 upprättade testamente beslutat att öfverlämna det pris, som innevarande år bortgifves "åt den, som har gjort den viktigaste kemiska upptäckt eller förbättring" till

Ra=226,4

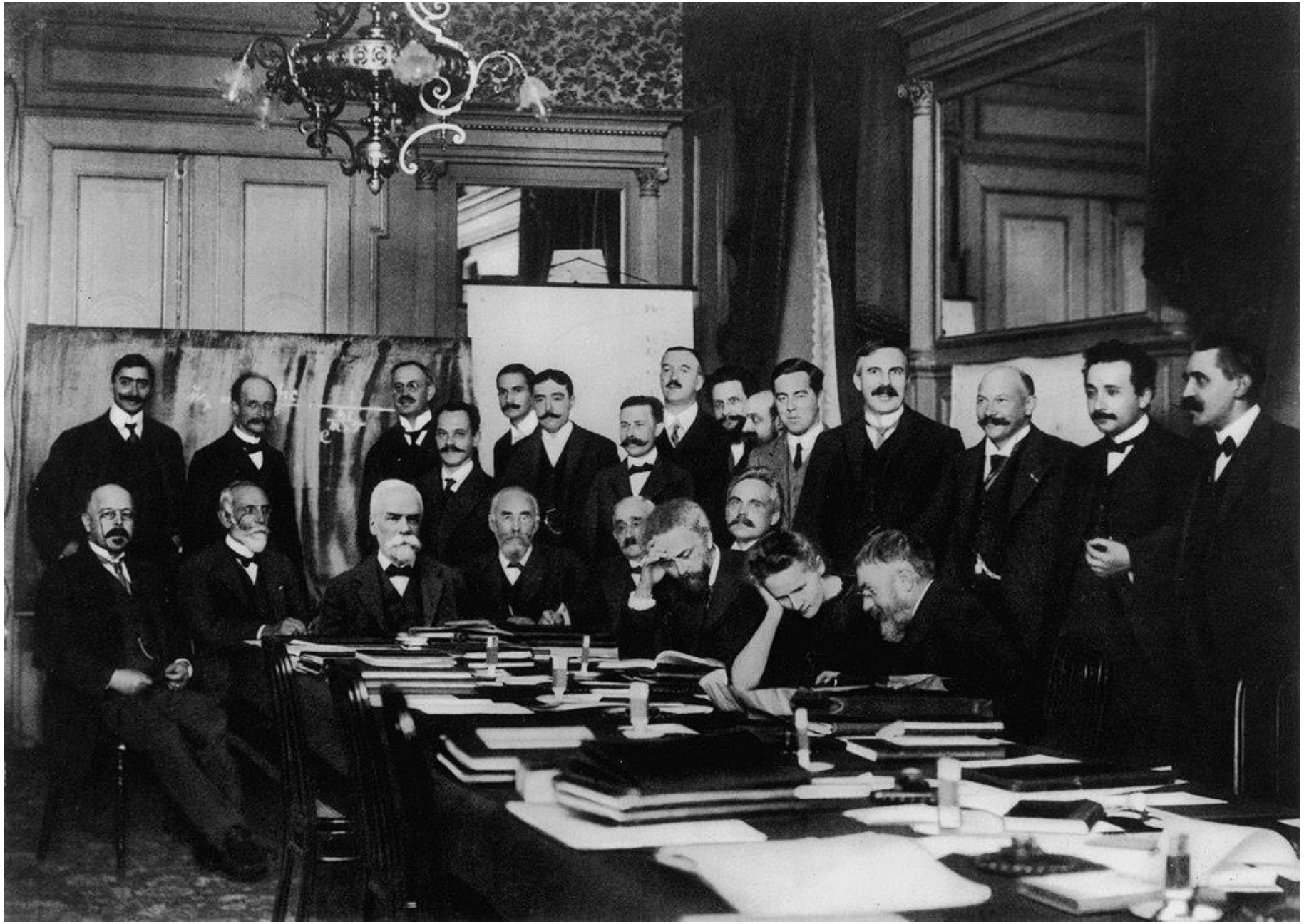
MARIE SKLODOWSKA CURIE

såsom ett erkännande för den förtjänst hon inlagt om kemiens utveckling genom upptäckten af grundämnena radium och polonium, genom karakteriserandet af radium och dess isolerande i metalliskt tillstånd samt genom sina undersökningar angående detta märkliga grundämnes föreningar.

Stockholm den 10 December 1911

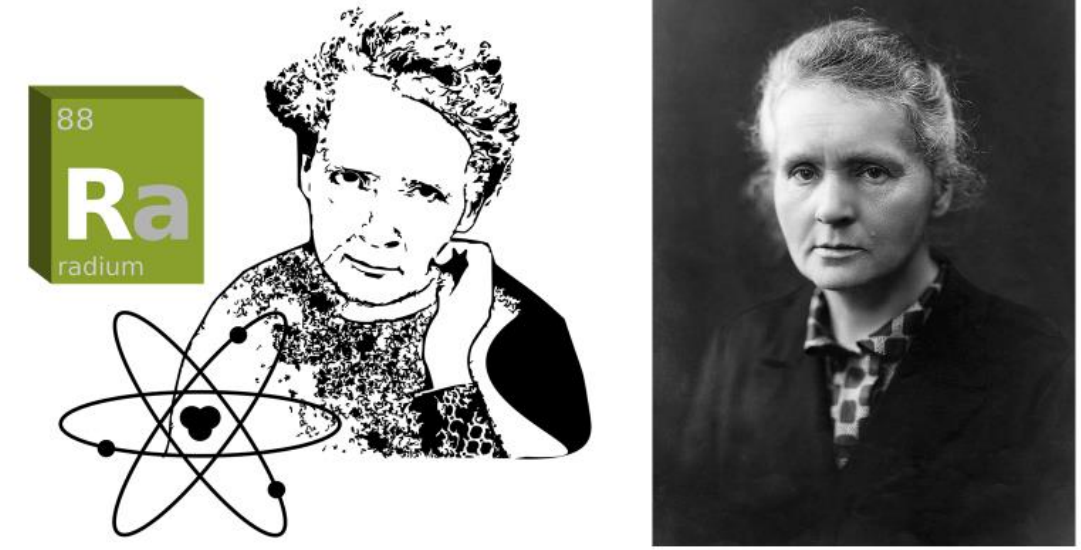
E. W. Dahlgren
Kungl. Ver. Akademi ordf.

Chr. Aurivillius
Kungl. Ver. Akademi sekreterare.



At the first Solvay Conference (1911), Curie (seated, second from right) confers with Henri Poincaré; standing nearby are Rutherford (fourth from right), Einstein (second from right), and Paul Langevin (far right).

MARIA
SKŁODOWSKA-CURIE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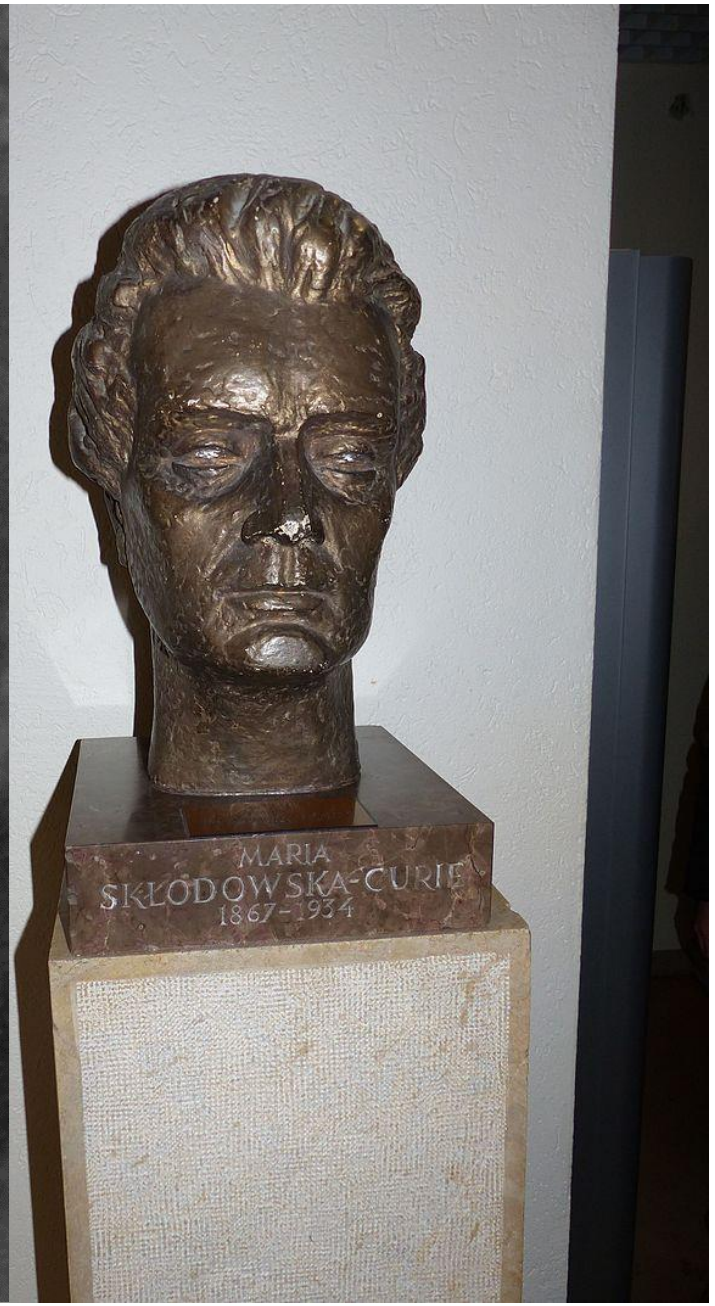
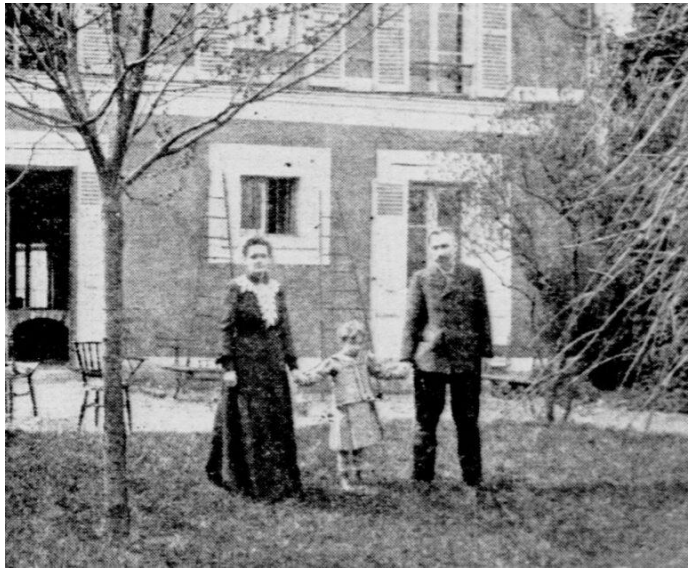
Ra
radium

MARII
SKŁODOWSKIEJ-CURIE
STOLICA
1935

MARII CURIE-SKŁODOWSKIEJ


MARIA
SKŁODOWSKA-CURIE
1867-1934